Panasonic

Colour CCTV Camera
Operating Instructions

Model No. WV-CS320
WV-CS324E

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

ENGLISH
DEUTSCH
FRANÇAIS
ESPAÑOL
ITALIANO

ENGLISH VERSION

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives EEC/73/23 and EEC/89/336.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatiefve dokumenten, overeenkomstig de bepalingen van Richtlijnen 73/23/EEC en 89/336/EEC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med den følgende standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 73/23/EEC og 89/336/EEC.

Vi deklarerar härmed värt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framstölls i Direktiv 73/23/EEC och 89/336/EEC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 73/23/EEC ia 89/336/EEC. säädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som fælger bestemmelsene i direktiven 73/23/EEC og 89/336/EEC.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK), NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Power disconnection. Unit with or without ON-OFF switches has power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. Unplug the power cord to disconnect the main power for all unit.

CAUTION:

Before attempting to connect or operate this product, please read the label on the bottom.

The serial number of this product may be found on the bottom of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. WV-CS320/324E

Serial No. _____

WARNING:
To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

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ENGLISH

PREFACE

Panasonic presents highly advanced CCTV technology that meets the demands of new and ever-changing applications.
This high-performance colour CCTV camera is utilized as a video surveillance device.
The camera incorporates the Digital Signal Processor, pan-tilt mechanism, and x10 zoom lens in a compact enclosure.

A newly developed 1/4-inch CCD is employed for use under extremely low lighting conditions: 2.0 lx for colour.
It also assures clear display of pictures in which bright and dark objects coexist without mutual interference thanks to the DSP. Setup menus allow the camera to fulfill surveillance tasks by such means as flip-a-chip and auto pan.

FEATURES

- High quality picture of 752 x 582 pixels
- Minimum illumination of 2.0 lx
- Flip-a-chip allows a 180° tilting to trace objects passing under the camera.
- Auto pan
- BLC
- 10 preset positions
- 360° panning at a rotation speed of 100°/s
- Sync selectable between internal, line-lock or VD2
- Automatic gain control circuit
- Image hold
- Digital noise reduction effect

■ Camera Cleaning

Even if this function is used, noise may be produced on the monitor screen, or the preset position may deviate in the cause of prolonged use.
In such cases, activate the refresh mode on the special menu. (See page 30.)

To use this camera with the WJ-SX550C Matrix Switcher, set the auto cleaning function on each unit side, then clean WV-CS320/WV-CS324E one time a day.

■ Preset Data Uploading or Downloading

To download the preset data from the camera to the controller or upload the downloaded data to the camera, set the following functions to OFF.
Downloading or uploading the data may not work normally if these functions are set to ON.

- Cleaning (See page 22.)
- Auto mode (See page 20.)
- Self return (See page 19.)

Aim the camera at a motionless object such as a wall if possible to download or upload the preset data.

Note: Take notice of the following cases when uploading the downloaded data to the camera.

- Preset positions may vary. If a preset position varies, delete the preset position and set the correct preset position newly.
- You cannot exchange the preset data between WV-CS320 and other models.

PRECAUTIONS

1. **Do not attempt to disassemble the camera.**
   To prevent electric shock, do not remove screws or covers.
   There are no user-serviceable parts inside.
   Ask a qualified service personnel for servicing.

2. **Handle the camera with care.**
   Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling or storage.

3. **Do not expose the camera to rain or moisture, nor try to operate it in wet areas.**
   This product is designed for indoor use or locations where it is protected from rain and moisture. Moisture can damage the camera and also cause electric shock.
   If the camera becomes wet, turn the power off immediately and ask a qualified service personnel for servicing.

4. **Do not use strong or abrasive detergents when cleaning the camera body.**
   Use a dry cloth to clean the camera when it is dirty.
   When the dirt is hard to remove, use a mild detergent and wipe gently. Care should be taken not to scratch the dome cover when wiping it.
   Afterwards, wipe off the remained part of the detergent in it with a dry cloth.

5. **Never face the camera towards the sun.**
   Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, blooming or smear may be caused.

6. **Never aim the camera at strong light sources for an extended period of time.**
   A light source such as a spot light causes burn-in on the display screen. Failure to observe this may cause the image to become discoloured due to deterioration of the colour filter in the CCD.

7. **Do not install this camera upside down.**
   This camera is designed for mounting on the ceiling or wall.
   Consult an expert on the load bearing capacity of the installation surface and structure. If the surface is not strong enough, the camera may fall down. Refer to the product specifications for weights.

8. **Do not operate the camera beyond the specified temperature, humidity or power source ratings.**
   Do not use the camera in an extreme environment where high temperature or high humidity exists. Do not place the camera near heat sources such as radiators, stoves or other units that produce heat.
   Use the camera under conditions where temperatures are between –10 °C and +50 °C (14 °F to 122 °F) [Recommended temperature: +40 °C (104 °F)], and humidity is below 90 %.
   The input power source is 220 V to 240 V AC for WV-CS320 and 24 V AC for WV-CS324E.

9. **Do not install the camera near the air outlet of an air conditioner.**
   The lens may become cloudy due to condensation if the camera is used under the following conditions.
   - Rapid temperature fluctuations by switching the air conditioner on and off.
   - Rapid temperature fluctuations due to frequent door opening and closing.
   - Use in an environment where eyeglasses become foggy.
   - Use in a room filled with cigarette smoke or dust.

   If the lens becomes cloudy due to condensation, remove the dome cover and wipe all moist surfaces with a soft cloth.

10. **Consumables**
    Parts having contacts such as the lens-drive motors, cooling fan motor and slip-rings inside the camera are subject to wear with time. Please ask the nearest service centre about replacement and maintenance of such parts.

11. Do not aim the camera at the same object for a long time.

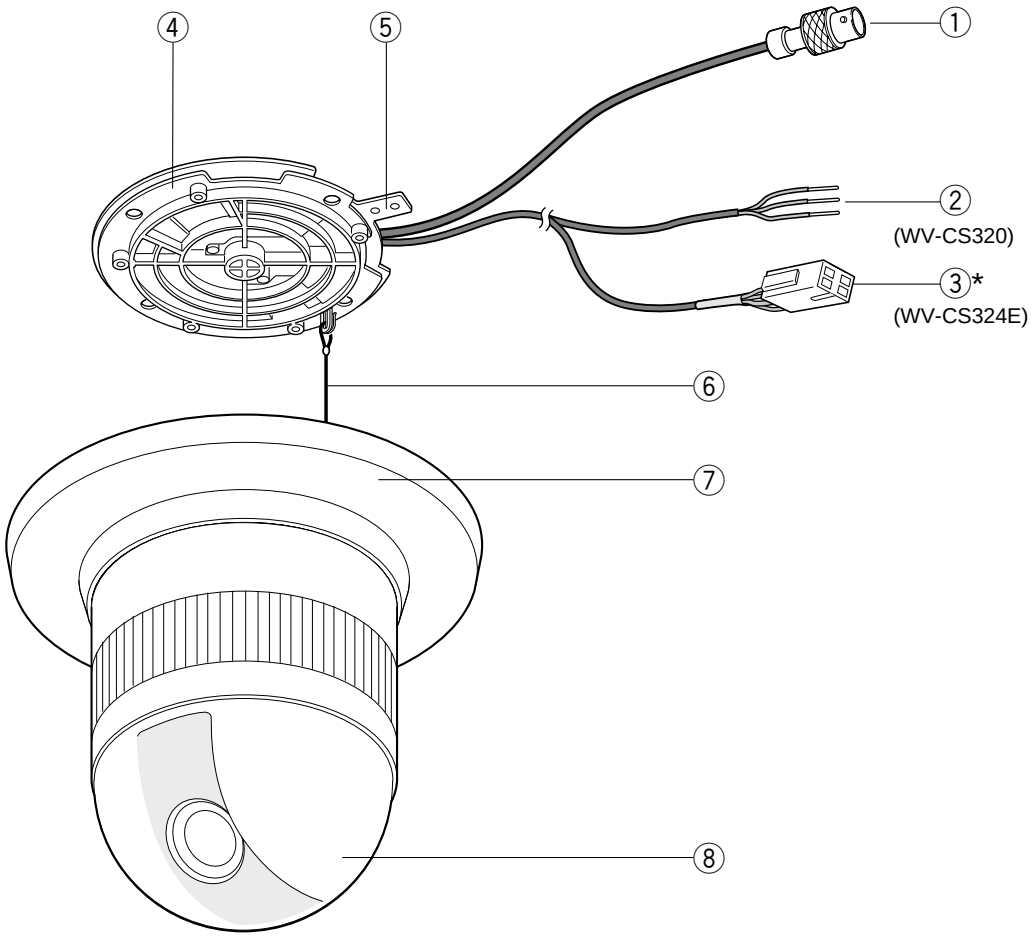
Burn-in of an image may be caused on the fluorescent screen of CRT.

- Matsushita Electric Industrial Co., Ltd. herewith declares that it will not be liable for any damage, whether direct or indirect, caused by using the product for business transaction or security, or malfunctioning of this product.

12. Self-diagnosis Function

If the camera continues operating abnormally for 30 seconds or more due to such accident as external noise, the camera will automatically reset its power. In the case it happens frequently, check if there would be any environmental cause.

CONSTRUCTION



① **Video Output Connector**

② **Power Cable for WV-CS320**

③*** Power Cable for WV-CS324E**

④ **Camera Mounting Base**

⑤ **Panning Starting Point**

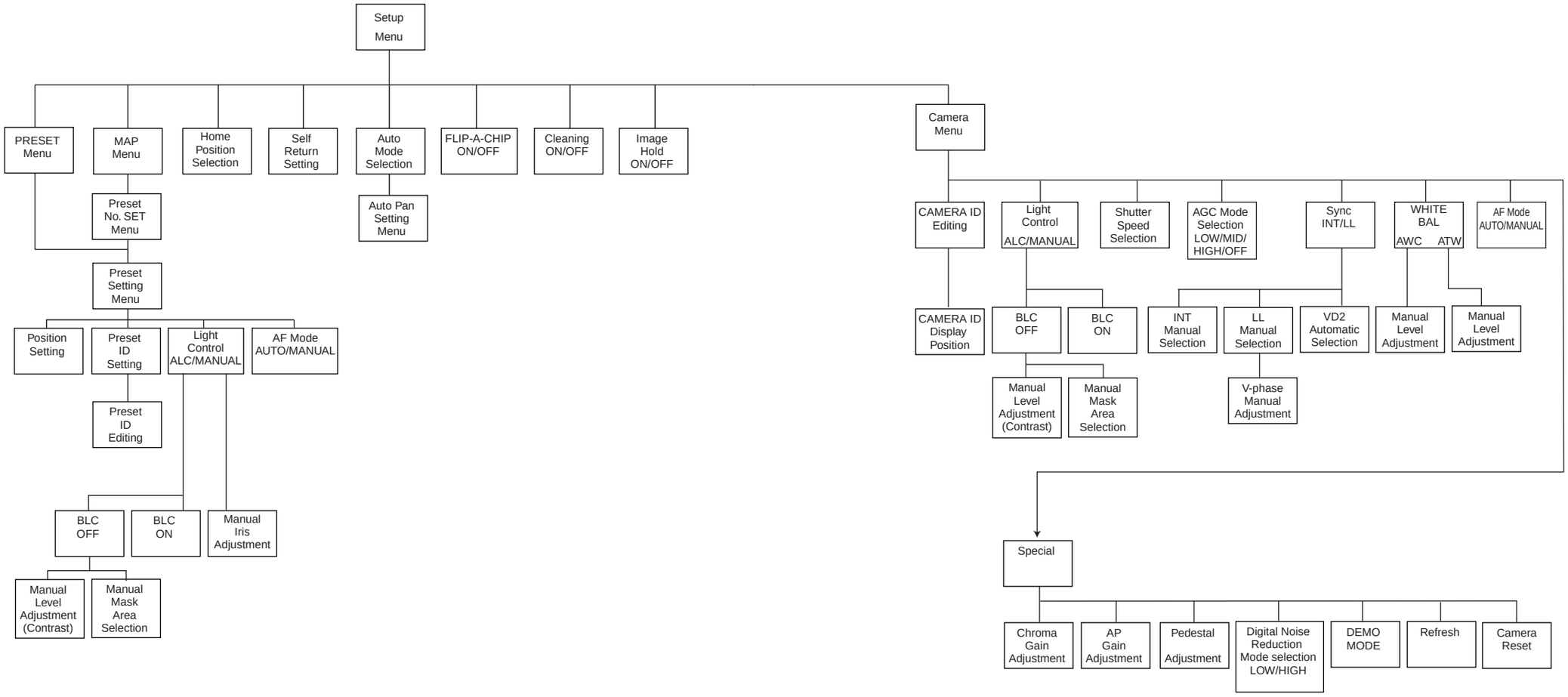
⑥ **Fall Prevention Wire**

⑦ **Decoration Cover**

⑧ **Dome Cover**

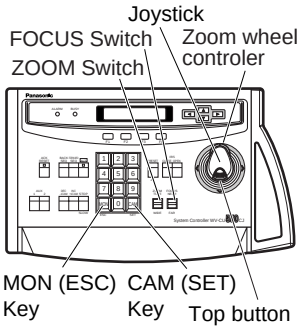
■ Setup Menu

Setup menus are shown in the diagram below. Various kinds of setup are available to have the camera fulfill your requirements. Menus are built in a hierarchical structure from the Setup menu at the top to Manual Mask Area Selection at the bottom.
These menus are described in the following pages for reference prior to setup.
Switches, keys and the joystick are used for setup operations.

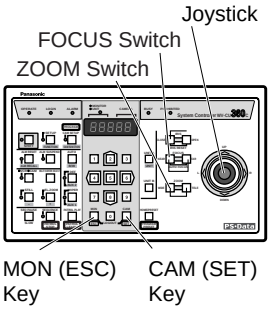


The keys (switches) to use for setup are shown in the table below. The joystick on the connected controller may also be used for setup. The table also shows the functions versus the operations of the individual controllers. For details, see the manual for the controller to be used. The switches and controls are abbreviated as SW and CTRL respectively in the table.

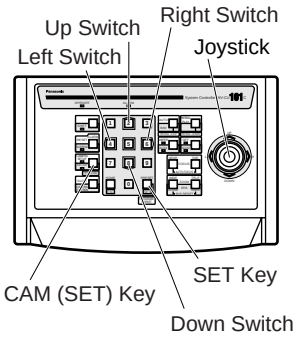
[WV-CU550CJ]



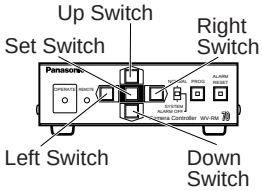
[WV-CU360C]



[WV-CU161C]



[WV-RM70]



Function/Controller	WV-CU550CJ	WV-CU360C	WV-CU161C	WV-RM70
Open CAM SETUP	See page 14	CAM SETUP key (for 2 seconds or more)	CAMERA SETUP key (for 2 seconds or more)	PROG SW (for 2 seconds or more) and SET SW at CAMERA SETUP on Program Menu
Close CAM SETUP	F4 key	CAM SETUP key (for 2 seconds or more)	CAMERA SETUP key (for 2 seconds or more)	PROG SW
Move the cursor	Joystick (←, ↑, ↓, →)	Joystick (←, ↑, ↓, →)	Direction SW (←, ↑, ↓, →)	Direction SW (←, ↑, ↓, →)
Select a parameter	Joystick (←, →)	Joystick (←, →)	Direction SW (←, →)	Direction SW (←, →)
Adjust the level	Joystick (←, →)	Joystick (←, →)	Direction SW (←, →)	Direction SW (←, →)
Move the camera direction	Joystick (←, ↑, ↓, →)	Joystick (←, ↑, ↓, →)	Joystick (←, ↑, ↓, →)	Direction SW (←, ↑, ↓, →)
Zoom & Focus	ZOOM SW & FOCUS SW or Zoom wheel controller & Top button	ZOOM SW & FOCUS SW	ZOOM SW & FOCUS SW	Direction SW (←, ↑, ↓, →)
Enter the setting	CAM (SET) key	CAM (SET) key	CAM (SET) key	SET SW
Open a submenu	CAM (SET) key	CAM (SET) key	CAM (SET) key	SET SW
Enter CAM ID & PRESET ID display position	MON (ESC) key	MON (ESC) key	MON (ESC) key	SET SW (for 2 seconds or more)
Enter MASK setting	MON (ESC) key	MON (ESC) key	MON (ESC) key	SET SW (for 2 seconds or more)
All Reset	F3 key	4+5+6 key (for 2 seconds or more)	4+5+6 key (for 2 seconds or more)	R+SET+L SW (for 2 seconds or more)
Open Special	F2 key	4+6 key (for 2 seconds or more)	4+6 key (for 2 seconds or more)	R+L SW (for 2 seconds or more)

Notes:

- A changed parameter is entered only when you move the cursor to another item or open a new menu.
  A changed parameter will not be entered if the setup menu is closed without taking either of the above steps.
- Setting procedures in the following pages are described on the assumption that the camera is used with WJ-SX550C Matrix Switcher and WV-CU550CJ System Controller.

■ Setup Menu Description

● Presetting

(1) Position (POSITION SET)

Aligns the camera position and focal point by panning, tilting, zooming and focusing.
See page 15 for the setting.

(2) Preset Identification (PRESET ID)

Assigns the name for preset IDs (identification of up to 16 alphanumeric characters) and can be switched on or off on the monitor screen.
See page 16 for the setting.

(3) Light Control (ALC/MANUAL)

Selects the ALC or MANUAL mode for adjusting the lens iris.
See page 18 for the setting.

● Home Position (HOME POSITION)

A home position is the camera's basic position.
It returns to this position automatically when a specific time has elapsed after a manual operation. This setting functions only when AUTO MODE is OFF.
See page 19 for the setting.

● Self Return (SELF RETURN)

Self-return is the time-out parameter for returning to the home position.
In ON position, the camera returns to AUTO MODE after a specific time following a manual operation.
See page 19 for the setting.

● Auto Mode (AUTO MODE)

You can activate the camera's auto turn within the preset panning range.
See page 20 for the setting.

● FLIP-A-CHIP

FLIP-A-CHIP is for setting the movement of the camera by using the joystick.
See page 22 for the setting.

● Cleaning (CLEANING)

This is used for refreshing the electro-mechanical contacts built into the camera. Use this function for maintenance when the camera has been directed at a specific spot or panned over a specific range for a long time.

● Image Hold (IMAGE HOLD)

The camera picture remains as a still image on the monitor screen or until the camera reaches the preset position. This function is useful for surveillance via a local area network.

● Camera

(1) Camera Identification (CAMERA ID)

You can use the camera identification to assign a name to the camera. The camera ID consists of up to 16 alphanumeric characters. You can select whether to have the camera ID displayed on the monitor screen or not. See page 23 for the setting.

(2) Light Control (ALC/MANUAL)

You can select the mode for adjusting the lens iris. There are two modes as follows:

ALC: The lens iris is automatically adjusted to suit the brightness of the object.
You can select one of two modes (BLC ON or BLC OFF) of backlight compensation.
Backlight compensation is available in the ALC mode. It eliminates strong background light which makes the camera picture dark such as a spotlight.

MANUAL: The lens iris is fixed at the value that you have set regardless of the brightness of an object.

- **ALC Mode with BLC ON**

In normal use, the important object in a scene is placed in the centre of the monitor screen. In the factory setting, more photometric weight is given to the centre of the screen than to the edge of the screen (where bright backlight would most likely be located). In such a case, the object at the centre of the screen can be still clearly seen even though the backlight may vary.
See page 24 for the setting.

- **ALC Mode with BLC OFF**

This mode is effective when the main object in the scene is not located in the centre of the screen but a source of bright light is located near the centre of the scene. In this mode, the picture is divided into 48 areas that mask the light to keep the clarity of the picture.

Note: The result of field setup of the mask area and level adjustment is fed back (effected) to the lens iris control in ALC mode.

(3) Shutter Speed (SHUTTER)

You can select a shutter speed from among 1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, and 1/10 000 seconds.
See page 26 for the setting.

(4) Gain Control (AGC)

You can set the gain (brightness level portion of an image) to automatic level adjustment ON (LOW, MID, HIGH) or fixed level (OFF).

See page 26 for the setting.

(5) Synchronization (SYNC)

You can select the internal sync (INT) mode or the line-lock sync (LL) mode. Additionally, this model accepts the VD2 signal (multiplexed vertical drive signal with the composite video output signal) from a specified component. Whenever the VD2 signal is supplied to this camera, the camera automatically switches to the VD2 sync mode.

When you select the line-lock sync (LL) mode, you can adjust vertical phase.

See page 26 for the setting.

(6) White Balance (WHITE BAL)

You can select one of two modes for white balance adjustment as follows.

- **Auto-Tracing White Balance (ATW)**

  In this mode, the colour temperature is monitored continuously and thereby white balance is set automatically. The colour temperature range for the proper white balance is approx.2 600 to 6 000 K. Proper white balance may not be obtained under the following conditions:

  1. The colour temperature is out of the 2 600 to 6 000 K range.
  2. When the scene contains mostly high colour temperature (bluish) objects, such as a blue sky.
  3. When the scene is dim.

  In these cases, select the AWC mode.

- **Automatic White Balance Control (AWC)**

  In this mode, accurate white balance is obtained within a colour temperature range of approx. 2 300 to 10 000 K.

  See page 28 for the setting.

(7) Auto Focus (AF MODE)

The camera adjusts the focus automatically by sensing the centre of the picture.

See page 29 for details.

MANUAL: Auto-focus is activated only when the AF key on the controller is pressed.

AUTO: Auto-focus is activated automatically while a manual pan, tilt or zoom operation is performed.

(8) Special Menu (SPECIAL)

This menu allows you to adjust and set up the following items and functions: chroma level, aperture level, pedestal level, demo mode function, digital noise reduction function and refresh function.

You can also reset your parameters to the values preset at the factory.

See page 30 for the setting.

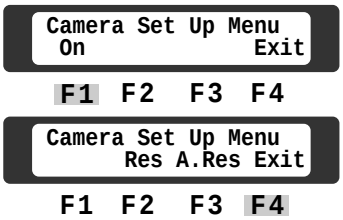
SETTING PROCEDURES

The following setting procedures are described on the assumption that this model is used in combination with the WJ-SX550C Matrix Switcher and WV-CU550CJ System Controller. In case a controller other than the WV-CU550CJ is used, refer to the table on page 10.

■ Menu Display

● Setup Menu Display

D4 menu



WV-CU550CJ

1. Select the camera number you want to set up and a monitor to display SET UP MENU.
2. Display the D4 menu on the LCD by pressing the appropriate cursor buttons.
3. Press the F1 button.
   SET UP MENU appears on the monitor screen.
4. To close SET UP MENU, press the F4 button.

WV-CU360C

Press the CAM SETUP key while holding down the SHIFT key to open the SETUP menu.

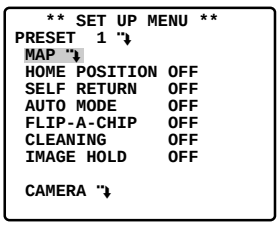
WV-CU161C

Press the CAMERA SETUP key for 2 seconds or more to open the SETUP menu.

WV-RM70

1. Turn the MODE SELECTION switch to NORMAL or ALARM OFF.
2. Press the PROG switch for 2 seconds or more to open the Program Menu.
3. Move the cursor to Camera Set Up Menu, and press the SET switch to open the SETUP MENU.

Setup menu



● Submenu Display

The items marked ▼ can be selected/changed on the submenu.

- Move the cursor to an item with the ▼ mark and press the CAM (SET) key. The submenu appears.

■ Presetting

● Preset Menu Display

1. Displaying the preset menu directly

(1) Move the cursor to PRESET 1 "↓ and select the position number by moving the joystick to the right or left.

(2) Press the CAM (SET) key.
The preset setting menu appears on the monitor screen.

2. Displaying the preset menu from the PRESET NUMBER SET menu

(1) Move the cursor to MAP "↓ and press the CAM (SET) key.
The PRESET NUMBER SET menu appears on the monitor screen.

(2) Move the cursor to the position number to be set and press the CAM (SET) key.
The preset setting menu appears on the monitor screen.

Notes:

- The * mark indicates that the position number has been preset.
- The character H refers to the home position.
- On the second bottom line, the preset ID appears respective to the selected number. “DOOR” next to “ID” in the example shown right is for preset position number 1.

Setup menu

```
   ** SET UP MENU **
PRESET  1 "↓
 MAP "↓
 HOME POSITION OFF
 SELF RETURN   OFF
 AUTO MODE     OFF
 FLIP-A-CHIP   OFF
 CLEANING      OFF
 IMAGE HOLD    OFF

 CAMERA "↓
```

Setup menu

```
   ** SET UP MENU **
PRESET  1 "↓
 MAP "↓
 HOME POSITION OFF
 SELF RETURN   OFF
 AUTO MODE     OFF
 FLIP-A-CHIP   OFF
 CLEANING      OFF
 IMAGE HOLD    OFF

 CAMERA "↓
```

PRESET NUMBER SET menu (1-10)

```
** PRESET NUMBER SET **

  1     2     3     4
  5     6     7     8
  9    10


   ID:
RET
```

● Position Setting (POSITION SET)

1. Move the cursor to POSITION SET on the preset setting menu and press the CAM (SET) key.
The position setting menu appears.

2. To Set Panning/Tilting Positions

(1) Move the cursor to PUSH SET for PAN/TILT and press the CAM (SET) key. The PAN/TILT setting menu appears.

(2) Select panning/tilting positions by moving the joystick up and down, right and left, and press the CAM (SET) key.
The positions are set and the screen returns to the position setting menu.

Note: When you press the CAM (SET) key, the camera might move slightly to memorize the nearest panning/tilting position.

3. To Set the Lens Zoom and Focus Positions

(1) Move the cursor to PUSH SET for ZOOM/FOCUS and press the CAM (SET) key. The ZOOM/FOCUS setting menu appears.

(2) Select a zoom position by moving the zoom control up and down, and a focus position by moving the focus control up and down, and then press the CAM (SET) key.
The positions are set and the screen returns to the position setting menu.

Preset setting menu

```
     PRESET NO. 1

POSITION SET  "↓
PRESET ID      ON  "↓
ALC/MANUAL     ALC "↓
AF MODE        MANUAL




RET   DEL
```

Position setting menu

```
    ** POSITION 1 **
PAN/TILT      →PUSH SET
ZOOM/FOCUS    →PUSH SET




RET
FLOOR 1
DOOR
```

PRESET NUMBER SET menu (1-10)

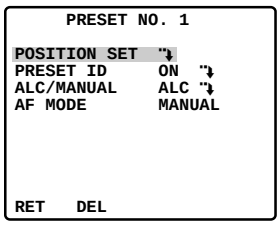
```
** PRESET NUMBER SET **

  1     2     3     4
  5     6     7     8
  9    10


   ID:
RET
```

Notes:

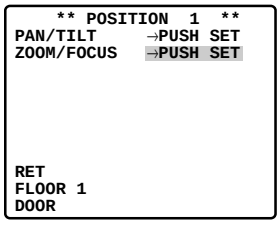
- When the camera is used at a nearly horizontal angle, the focus may not be adjustable to a high level of accuracy.
- If you move the cursor to the position number and move the joystick right or left, the position number can be selected.
  The selected preset position number can also be set after pressing the CAM (SET) key.
- The preset and camera IDs appear at the lower-left corner of the position setting menu after setting them.
- With WV-CU550CJ, you can also select a zoom position by moving the zoom wheel controller to right or left.
- With WV-CU550CJ, you can also select a focus position automatically by pressing the top button.

4. Move the cursor to RET and press the CAM (SET) key to return to the preset setting menu.

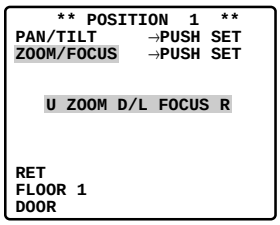
Position setting menu



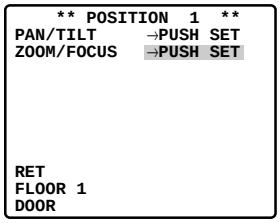
Position setting menu



ZOOM/FOCUS setting menu



Position setting menu

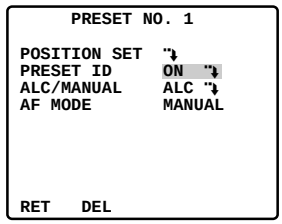


● Preset Identification Setting (PRESET ID)

1. Move the cursor to PRESET ID on the preset setting menu and select ON or OFF by moving the joystick to the right or left.
The factory default setting is OFF.

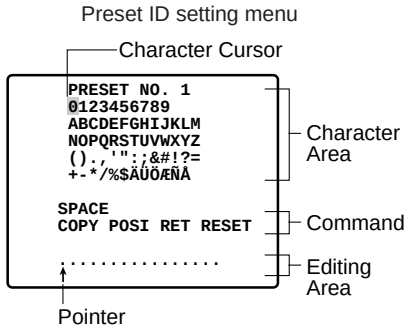
2. Press the CAM (SET) key to display the preset ID setting menu.

Preset setting menu



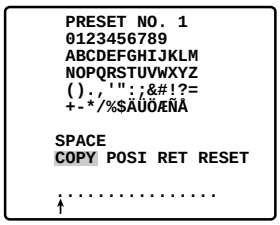
To Enter a New Preset ID

(1) Move the cursor to the desired character using the joystick, and press the CAM (SET) key.
(2) The selected character appears in the editing area. (The pointer in the editing area moves to the right automatically at this moment.) To enter a blank, select SPACE.
(3) Repeat the above procedure until all characters are entered.



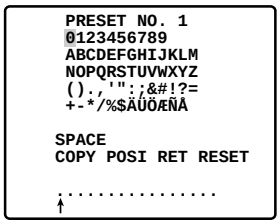
To Copy a Preset ID from Another Position

(1) Move the cursor to COPY and press the CAM (SET) key. The preset ID in the preceding position is immediately shown. Each consecutive pressing of the CAM (SET) key displays the ID preceding the one currently displayed.
(2) Display the most prospective ID.
(3) Follow the step "To Change an Entered Preset ID" if necessary.



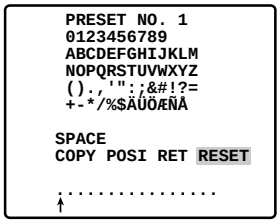
To Change an Entered Preset ID

(1) Move the pointer to the character to be edited in the editing area by using the joystick.
(2) Select a new character by using the joystick.
(3) Press the CAM (SET) key to determine the Preset ID.



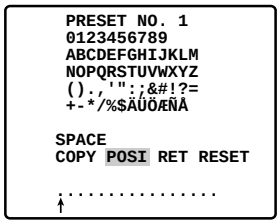
To Delete an Entered Preset ID

Move the cursor to RESET and press the CAM (SET) key.

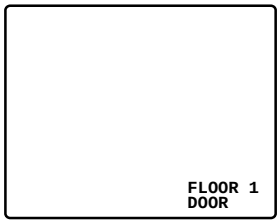


To Set a Display Position for a Preset ID

(1) Move the cursor to POSI and press the CAM (SET) key. The display position set menu appears.
(2) Move the ID to the desired position by using the joystick, and press the MON (ESC) key. The display position is set and the monitor screen returns to the preset ID setting menu.



Display position set menu



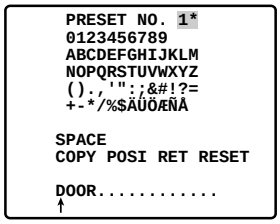
To Enter the Next ID without Returning to the Preset Setting Menu

(1) In the preset ID setting menu, move the cursor to the top line and select a desired position number by moving the joystick to the right or left.

(2) Enter, copy, change or delete the ID as described above.

To Return to the Preset Setting Menu

Move the cursor to RET and press the CAM (SET) key.



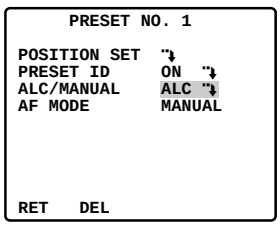
● Light Control Setting (ALC/MANUAL)

1. Move the cursor to ALC/MANUAL and select ALC or MANUAL by moving the joystick to the right or left.
   The factory default setting is ALC.
   ALC: The lens iris is automatically adjusted to suit the brightness of the object.
   MANUAL: The lens iris is fixed at the set value regardless of the brightness of the object.

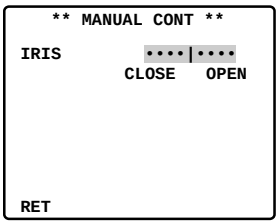
2. In case of ALC "↓
   Press the CAM (SET) key. The backlight compensation menu appears on the monitor screen. See page 24 for the setting.

3. In case of MANUAL "↓
   Press the CAM (SET) key. The setting menu appears on the monitor screen. Set the lens iris level as desired by moving the joystick to the right or left.

Preset setting menu



Manual setting menu

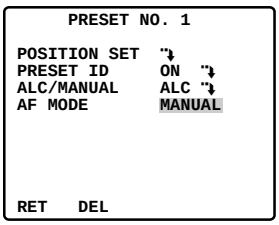


● Auto Focus Setting (AF MODE)

1. Move the cursor to AF MODE, and select the following mode by moving the joystick to the right or left.
   The factory default setting is MANUAL.
   MANUAL: AF does not work after moving to a preset position.
   AUTO: AF works after moving to a preset position.

   To confirm auto-focus operation, press CAM (SET) key while the cursor is at AF MODE.

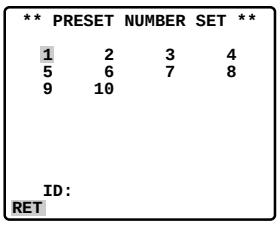
Preset setting menu



● To Return to the Preset Number Set Menu

- Move the cursor to RET and press the CAM (SET) key. The PRESET NUMBER SET menu appears with the * mark on the right of the preset position number.

PRESET NUMBER SET menu



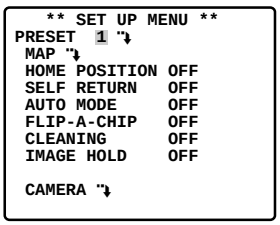
● To Return to the Setup Menu

- Move the cursor to RET and press the CAM (SET) key.

■ Deleting Preset Positions

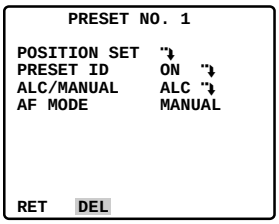
1. Move the cursor to PRESET 1 and select the position number to be deleted by using the joystick.

Setup menu



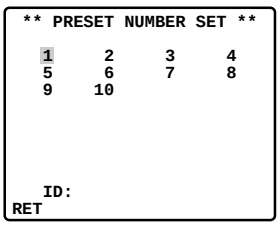
2. Press the CAM (SET) key to display the preset setting menu.

Preset setting menu



3. Move the cursor to DEL and press the CAM (SET) key.
   This deletes the preset position and the PRESET NUMBER SET menu appears. The * mark on the right of the number disappears.

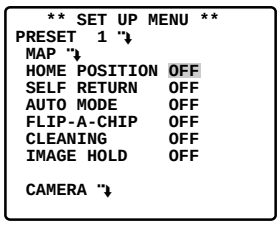
PRESET NUMBER SET menu



■ Home Position Setting (HOME POSITION)

1. To set a position number for the home position
   Move the cursor to HOME POSITION and select a desired position number by moving the joystick to the right or left.
   The factory default setting is OFF.

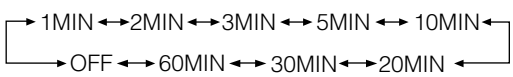
Setup menu



■ Self Return Setting (SELF RETURN)

To set a time-out parameter for return to the home position

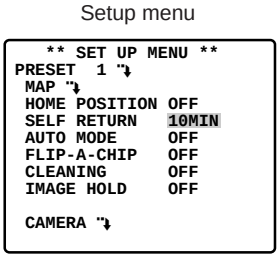
- Move the cursor to SELF RETURN and select a return time by moving the joystick to the right or left.
  The factory default setting is OFF.
  Return time changes as follows:



  MIN stands for minute(s).

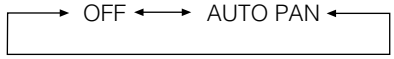
  Note: The camera will return to the auto mode if that is set to AUTO PAN when a specific time has elapsed after a manual operation.

Setup menu



■ Auto Mode Selection (AUTO MODE)

1. To set auto mode
   Move the cursor to AUTO MODE and select a mode by moving the joystick to the right or left.
   The factory default setting is OFF.
   Modes change as follows:



   OFF: No automatic operation. The camera can be operated only manually.
   AUTO PAN: You can activate the camera's auto turn within the preset panning range.

2. When the AUTO PAN mode is selected, set details as follows:
   Move the cursor to AUTO PAN ▼ and press the CAM (SET) key to display the AUTO PAN setting menu.

3. To set a panning starting point and panning endpoint
   Follow the steps below.
   (1) Move the cursor to POSITION and press the CAM (SET) key. The cursor moves to START.
   (2) Move the joystick to the right or left to select a panning starting point and press the CAM (SET) key.
   This determines the starting point and the cursor moves to END.
   (3) Move the joystick to the right or left to select a panning endpoint and press the CAM (SET) key.
   This determines the endpoint and the cursor moves to POSITION.

4. To set a panning speed
   Move the cursor to SPEED, and set a panning speed by moving the joystick to the right or left.
   The panning speed increases when the joystick is moved to the right, and decreases when it is moved to the left.

Notes:

- If the panning range is changed after the camera has not panned for a long time or has been panning in the same panning range, the picture may not be clear or noise may appear. In this case, pan the camera fully several times.
  If this does not eliminate the problem, refer servicing to qualified service personnel.
- When you press the CAM (SET) key, the camera might move slightly to memorize the nearest panning/tilting position.

Setup menu

```
   ** SET UP MENU **
PRESET  1 ▼
 MAP ▼
 HOME POSITION OFF
 SELF RETURN   OFF
 AUTO MODE     AUTO PAN▼
 FLIP-A-CHIP   ON
 CLEANING      OFF
 IMAGE HOLD    OFF

 CAMERA ▼
```

AUTO PAN setting menu

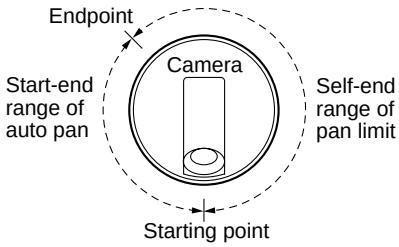
```
      ** AUTO PAN **

POSITION      START
              END
SPEED         ····|····
              L       H
PAN LIMIT     OFF
ENDLESS       OFF
DWELL TIME    2S


RET
```

```
      ** AUTO PAN **

POSITION      START
              END
SPEED         ····|····
              L       H
PAN LIMIT     OFF
ENDLESS       OFF
DWELL TIME    2S


RET
```

```
      ** AUTO PAN **

POSITION      START
              END
SPEED         ····|····
              L       H
PAN LIMIT     OFF
ENDLESS       OFF
DWELL TIME    2S


RET
```

```
      ** AUTO PAN **

POSITION      START
              END
SPEED         ····|····
              L       H
PAN LIMIT     OFF
ENDLESS       OFF
DWELL TIME    2S


RET
```

5. To set pan limit ON/OFF
   Move the cursor to PAN LIMIT and select ON or OFF by moving the joystick to the right or left.
   The factory default setting is OFF.
   ON: Manual pan is limited from the starting point to the end-point specified by position setting. Set ENDLESS to OFF before PAN LIMIT is set to ON.
   OFF: Manual pan is not limited.

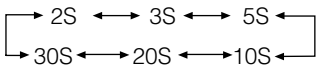


   Note: When ON is selected for PAN LIMIT, manual pan moves the camera away from the other side (PAN LIMIT) of the start-end range.

6. To set ENDLESS to ON/OFF
   Move the cursor to ENDLESS, and select ON or OFF by moving the joystick to the right or left.
   The factory default setting is OFF.
   ON: The camera pans from the starting point to the endpoint, and keeps rotating in the same direction to return to the starting point. Set PAN LIMIT to OFF before ENDLESS is set to ON.
   OFF: The camera pans from the starting point to the endpoint, and rotates backward to the starting point.
   This movement is repeated over and over.

```
     ** AUTO PAN **

POSITION       START
               END
SPEED          ••••|••••
               L       H
PAN LIMIT      OFF
ENDLESS        ON
DWELL TIME     2S


RET
```

7. To set a dwell time
   Move the cursor to DWELL TIME and select a dwell time by moving the joystick to the right or left.
   The factory default setting is 2S.
   Dwell time changes as follows:




```
     ** AUTO PAN **

POSITION       START
               END
SPEED          ••••|••••
               L       H
PAN LIMIT      OFF
ENDLESS        OFF
DWELL TIME     2S


RET
```

Notes:

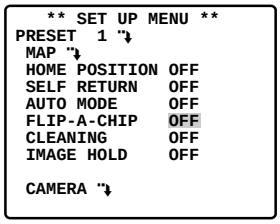
- When the panning, tilting, zooming or focusing in the AUTO PAN mode is controlled manually, the Auto mode function should be cancelled.
  To activate the auto mode, select the AUTO PAN mode again or set a time for SELF RETURN in the SET UP menu.
- Auto refreshing may be activated during the auto mode to calibrate the lens position.

■ Flip-A-Chip Setting

Move the cursor to FLIP-A-CHIP and select ON or OFF by moving the joystick to the right or left.
The factory default setting is OFF.
OFF: Tilt range is limited from 0° to 92°.
ON: The flip-a-chip function allows the tilt angle to widen up to 180°.

Note: Flip-a-chip does not work if PAN LIMIT is set to ON.

Setup menu



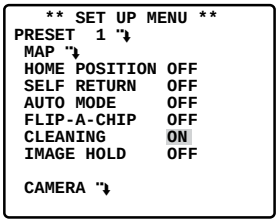
■ Cleaning (CLEANING)

Built-in electric mechanical contacts are refreshed at regular intervals (approx. 7 days) if CLEANING is set to ON.
A dry contract adversely affects picture quality and motors operation.

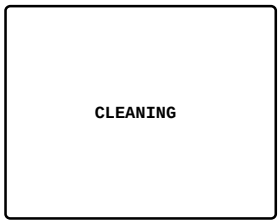
1. Move the cursor to CLEANING and select ON or OFF by moving the joystick to the right or left.
   The factory default setting is OFF.

   ON: The contacts are cleaned for approx. 1 minute. “CLEANING” disappears when it is over.
   OFF: No contact cleaning
   Note: Select OFF when the camera downloads or uploads the preset data.

Setup menu



CLEANING

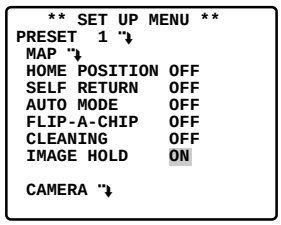


■ Image Hold (IMAGE HOLD)

The camera picture remains as a still image on the monitor screen until the camera reaches the preset position. This function is useful for surveillance via a local area network.

1. Move the cursor to IMAGE HOLD and select ON or OFF.
   The factory default setting is OFF.

Setup menu

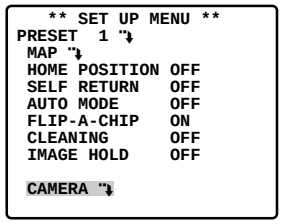


■ Camera Setting

To Display the Camera Setting Menu

- Move the cursor to CAMERA, and press the CAM (SET) key. The camera setting menu appears.

Setup menu

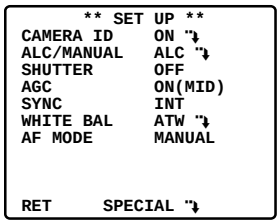


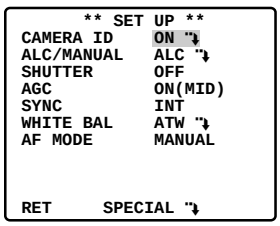
● Camera Identification (CAMERA ID)

1. Move the cursor to CAMERA ID and select ON or OFF by moving the joystick to the right or left. The factory default setting is OFF.
   ON: Camera ID appears on the monitor screen.
   OFF: Camera ID does not appear.

2. Press the CAM (SET) key to display the camera ID setting menu.

Camera setting menu

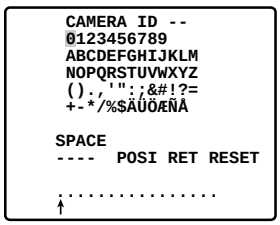




To Enter a New Camera ID

(1) Move the cursor to the desired character using the joystick, and press the CAM (SET) key.
(2) The selected character appears in the editing area. (The pointer in the editing area moves to the right automatically at this moment.) To enter a blank, select SPACE.
(3) Repeat the above procedure until all characters are entered.
Note: Refer to pp. 17 and 18 for POSI, RET and RESET.

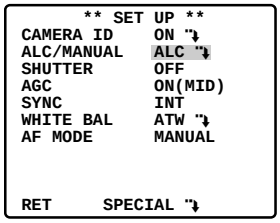
Character editing menu



● Light Control Setting (ALC/MANUAL)

1. Display the SET UP menu on the monitor screen by referring to page 14.
2. Move the cursor to ALC/MANUAL and select ALC or MANUAL by using the joystick.
   The factory default setting is ALC.
   When you select ALC, set backlight compensation.
   Note: The backlight compensation submenu associated with this menu is described separately and should be set up after installing the camera at the site and observing the actual site picture.
3. When MANUAL is selected, quit the setup menu by pressing the MON (ESC) key. Press the OPEN or CLOSE key on the controller for iris adjustment.

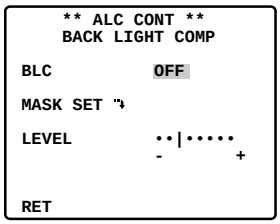
Camera setting menu

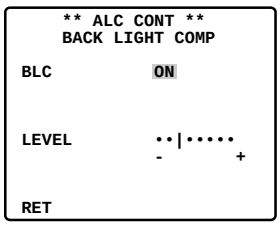


(1) ALC Mode with BLC ON

1. Press the CAM (SET) key after selecting ALC. The ALC CONT menu appears.
2. Move the cursor to the BLC and select ON.
3. If you want to adjust the video output level, move the "I" cursor for LEVEL. Adjust it to the desired level by using the joystick.
4. Move the cursor to RET and press the CAM (SET) key to return to the CAM SET UP menu. To return to the camera picture, press the F4 button.

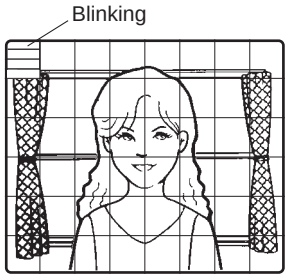
Backlight compensation menu

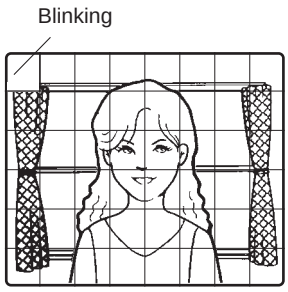


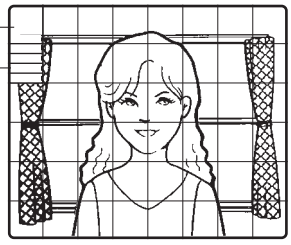


(2) ALC Mode with BLC OFF

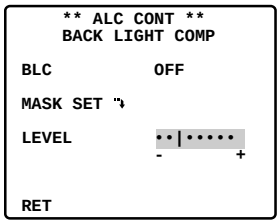
1. Move the cursor to the BLC and select OFF. When you select MANUAL, BLC is not available. The MASK SET appears on the menu.
2. Move the cursor to MASK SET and press the CAM (SET) key. The 48 mask areas appear on the monitor screen. The cursor is blinking in the top left corner of the screen.
3. To mask an area where backlight is bright, move the cursor to the area and press the CAM (SET) key. The mask turns to white. Repeat this procedure to mask the desired area.
4. To cancel a masked area, move the cursor to the area, and press the CAM (SET) key. To cancel all masking areas, press the F2 button of the WV-CU550CJ. For the WV-RM70, press the right and left switches simultaneously.

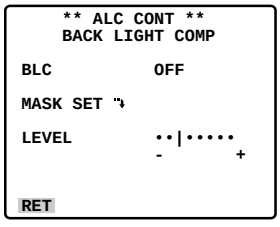






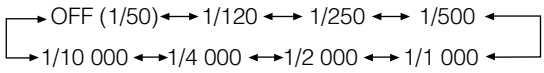
5. After masking is completed, press the MON (ESC) key. The 48 mask areas on the monitor screen disappear and the ALC CONT menu appears.
6. If you want to change the video output level (picture contrast), move the “I” cursor for LEVEL and adjust the level.
7. Move the cursor to RET and press the CAM (SET) key to return to the CAM SET UP menu. To return to the camera picture, press the F4 button.





● Shutter Speed Setting (SHUTTER)

Move the cursor to SHUTTER and select the electronic shutter speed by using the joystick. The factory default setting is OFF.
The electronic shutter speed changes as follows by using the joystick:



Camera setting menu

```
      ** SET UP **
CAMERA ID     ON
ALC/MANUAL    ALC
SHUTTER       OFF
AGC           ON(MID)
SYNC          INT
WHITE BAL     ATW
AF MODE       MANUAL


RET      SPECIAL
```

● Gain Control (AGC)

Move the cursor to AGC and select ON (LOW), ON (MID), ON (HIGH) or OFF by using the joystick.
The factory default setting is ON (MID).

Notes:

- Even if AGC is set to ON and if the noise reduction function is enabled, afterimages may be produced by shooting a moving object or by panning or tilting the camera.
- For more information, refer to Digital Noise Reduction on page 31.

Camera setting menu

```
      ** SET UP **
CAMERA ID     ON
ALC/MANUAL    ALC
SHUTTER       OFF
AGC           ON(MID)
SYNC          INT
WHITE BAL     ATW
AF MODE       MANUAL


RET      SPECIAL
```

● Synchronization (SYNC)

Move the cursor to SYNC and select line-lock (LL) or internal (INT) by using the joystick.
The factory default setting is INT.

Important Notices:

1. The priority of sync modes is given as follows:
   1. Multiplexed vertical drive (VD2) (highest priority)
   2. Line-lock (LL)
   3. Internal sync (INT) (lowest priority)
2. Whenever the vertical drive pulse (VD2) is supplied to the camera, the camera sync mode is automatically switched to the multiplexed vertical drive pulse (VD2) regardless of the selected sync mode.

Camera setting menu

```
      ** SET UP **
CAMERA ID     ON
ALC/MANUAL    ALC
SHUTTER       OFF
AGC           ON(MID)
SYNC          INT
WHITE BAL     ATW
AF MODE       MANUAL


RET      SPECIAL
```

Line-lock Sync Mode (LL)

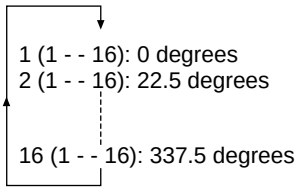
1. Move the cursor to SYNC and select LL by using the joystick. LL sync mode is not available when the multiplexed vertical drive (VD2) pulse is supplied.
2. After selecting LL, press the CAM (SET) key.
   The SYNC menu appears on the monitor screen.
3. Supply the video output signal of the camera to be adjusted and the reference video output signal (for example, Camera 1) to a dual-trace oscilloscope.
4. Set the dual-trace oscilloscope to the vertical rate and expand the vertical sync portion on the oscilloscope.

Camera setting menu

```
      ** SET UP **
CAMERA ID     ON
ALC/MANUAL    ALC
SHUTTER       OFF
AGC           ON(MID)
SYNC          LL
WHITE BAL     ATW
AF MODE       MANUAL


RET      SPECIAL
```

5. Move the cursor to COARSE by using the joystick.

6. Match the vertical phases for both video output signals as closely as possible by using the joystick. The coarse adjustment can be incremented in steps of 22.5 degrees (16 steps) with the joystick.

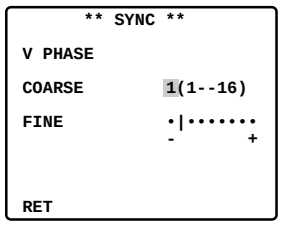


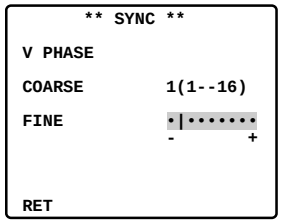
Note: After the 16 steps, the adjustment returns to the first step.

7. Move the cursor to FINE by using the joystick.

8. Use the joystick to match the vertical phase for both video output signals as closely as possible.

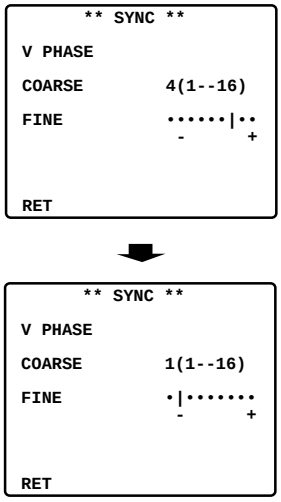
SYNC menu





Notes:

- When the "I" cursor reaches the "+" end, it jumps back to "–". At the same time, COARSE is incremented by one step to enable a continuous adjustment. The reverse takes place when the "I" cursor reaches the "–" end.
- When the joystick is kept at the right or left for one second or more, the "I" cursor moves quickly.
- To reset COARSE and FINE to the preset values, press the F2 button of the WV-CU550CJ. For the WV-RM70, press the Right and Left switches simultaneously. COARSE is preset to zero-cross of the AC line phase.
- If the AC line contains noise (spike noise, etc.), the stability of the vertical phase of the camera video output signal may be disturbed.



● White Balance (WHITE BAL)

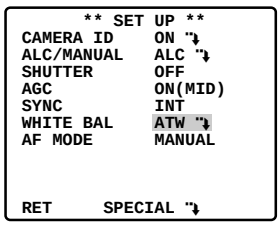
(1) Auto-Tracing White Balance Mode (ATW)

1. Move the cursor to WHITE BAL and select ATW by using the joystick.
   The factory default setting is ATW.
   The white balance of the camera is automatically set.

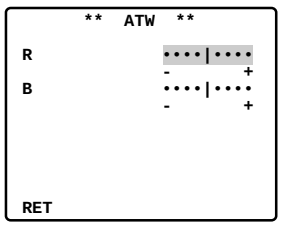
2. For fine adjustment of the ATW, press the CAM (SET) key. The ATW fine adjustment menu appears on the monitor screen.

3. Move the cursor to RET by using the joystick and press the CAM (SET) key to return to the SET UP menu.

Camera setting menu



ATW fine adjustment menu

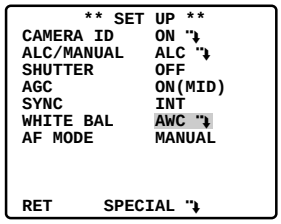


(2) Automatic White Balance Control Mode (AWC)

1. Move the cursor to WHITE BAL and select AWC → PUSH SW by using the joystick.

2. Press the CAM (SET) key to start the white balance setup. PUSH SW is highlighted to indicate that white balance is being set.

Camera setting menu

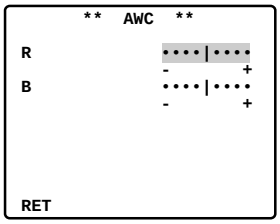


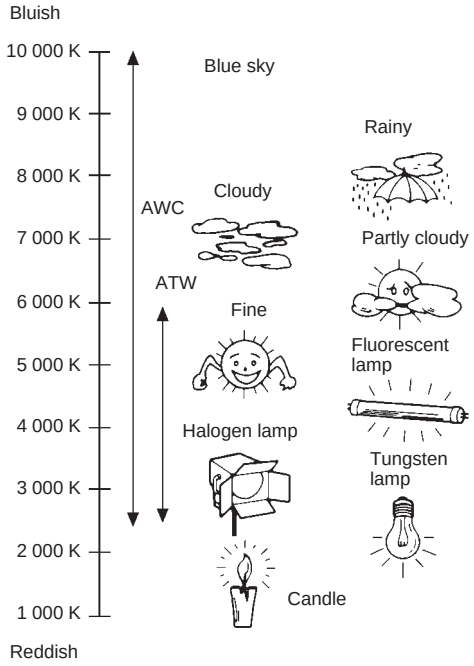
3. PUSH SW returns to normal when balance setting is completed.

4. For fine adjustment of the AWC, move the cursor to AWC and press the CAM (SET) key. The AWC fine adjustment menu appears on the monitor screen.

5. Move the cursor to RET by using the joystick and press the CAM (SET) key to return to the SET UP menu.

AWC fine adjustment menu



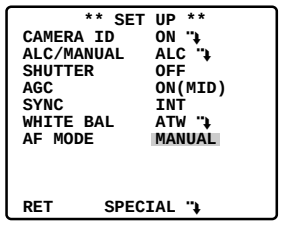


● Auto Focus Setting (AF MODE)

1. Move the cursor to AF MODE, and select the following mode by moving the joystick to the right or left.
   The factory default setting is MANUAL.

2. To confirm auto-focus operation, press the CAM (SET) key.

Camera setting menu



Note:

The auto focus lens may not function properly in the AUTO mode under the following conditions.

1. Dirt or water on window glass
   The auto focus may focus on the dirt or water.
2. Low lighting or illumination
3. Bright objects or high intensity objects
4. Single colour object such as a white wall or fine felt
5. No centre objects and sloping objects
6. Far and near objects on the screen

● Special Menu (SPECIAL)

This menu lets you adjust and set up the picture quality to meet your requirements.

- Move the cursor to SPECIAL and press the F2 button of the WV-CU550CJ. The special menu appears on the monitor screen.
  For the WV-RM70, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

(1) Chroma Level Setting (CHROMA GAIN)

1. Move the cursor to CHROMA GAIN. The "I" cursor is highlighted.
2. To reset the level to the factory default setting, press the F2 button of the WV-CU550CJ.
   For the WV-RM70, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

(2) Aperture Level Setting (AP GAIN)

1. Move the cursor to AP GAIN. The "I" cursor is highlighted.
2. To reset the level to the factory default setting, press the F2 button of the WV-CU550CJ.
   For the WV-RM70, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

(3) Pedestal Level Setting (PEDESTAL)

1. Move the cursor to PEDESTAL. The "I" cursor is highlighted.
2. To reset the level to the factory default setting, press the F2 button of the WV-CU550CJ.
   For the WV-RM70, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

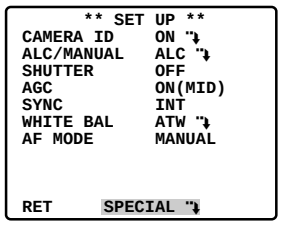
(4) To Restore the Camera Default Position (REFRESH)

Move the cursor to REFRESH by using the joystick and press the F2 button of the WV-CU550CJ.
For the WV-RM70, WV-CU360C or WV-CU161C, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

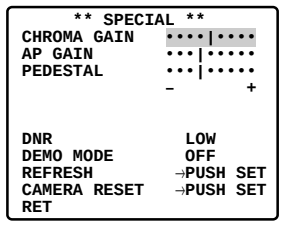
(5) Camera Resetting (CAMERA RESET)

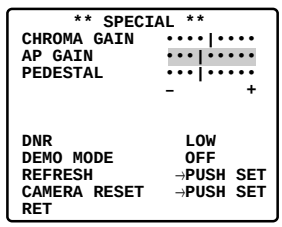
Move the cursor to CAMERA RESET by using the joystick and press the F3 button of the WV-CU550CJ.
The camera is reset to the factory settings.
For the WV-RM70, keep pressing the Right, Left and Set switches simultaneously for 2 seconds or more. For the WV-CU360C or WV-CU161C, keep pressing the Right and Left switches and the numeric button 5 simultaneously for 2 seconds or more.

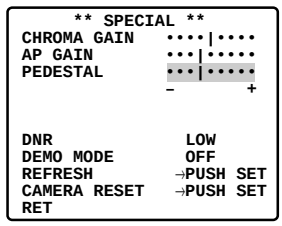
Camera setting menu

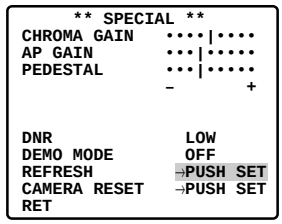


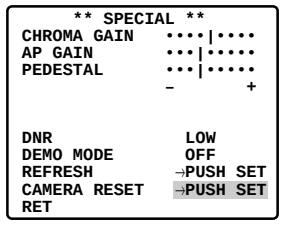
Special menu











(6) Digital Noise Reduction (DNR)

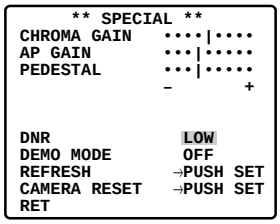
DNR may be used to improve quality under low light conditions. There are 2 levels of DNR, which may be selected depending on local site conditions. Default: LOW

You may need to try different settings to find the most suitable conditions for your application.

Move the cursor to DNR and select LOW or HIGH by moving the joystick to the right or left.

LOW: DNR level is low.

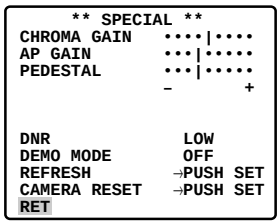
HIGH: DNR level is high.



(7) To Close the SPECIAL Menu

Move the cursor to RET and press the CAM (SET) key.

The setup menu appears on the monitor screen.



● Demo Mode

You can output the upside-down image by using Demo Mode.

Note: Never face the camera at a place exposed to light sources for a long time. If light sources such as spot light cause burn-in on the display screen, part of image may discolour due to deterioration of colour filter in CCD when changing aim of the camera etc.

Reset to the Factory Default Settings

Any of the above settings plus the ALC/MANUAL level control and phase adjustments can be reset to the factory default settings by placing the cursor over the desired mode and then pressing the F2 button of the WV-CU550CJ. For the WV-RM70, keep pressing the Right and Left switches simultaneously for 2 seconds or more.

INSTALLATION

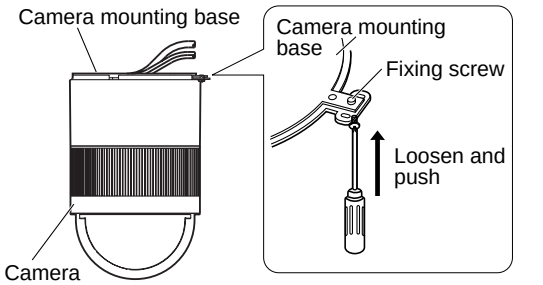
Precautions

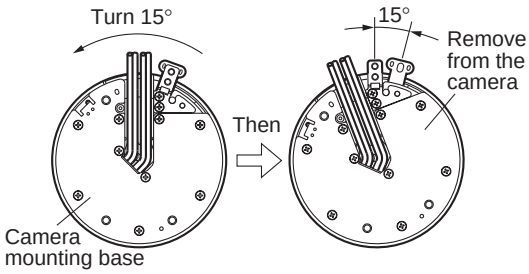
- The following steps of installation and connection work should be done by qualified service personnel or system installers and should conform to all local codes.
- Be sure to switch the camera off before installation and connection.
- Do not install the camera near the air outlet of an air conditioner.

1. Disassembling the Camera

(1) Loosen the fixing screw to separate the camera mounting base and the camera. Push up the screwdriver once before removing the screw.

(2) Turn the camera mounting base approximately 15 degrees counterclockwise and remove the base from the camera.





2. Mounting the Camera

Reverse the disassembly procedure. Take care not to cut any cables.

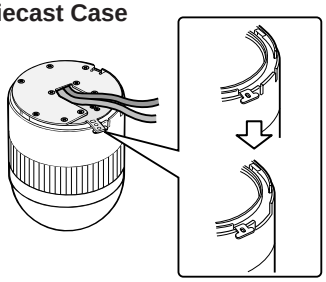
Precaution

Be sure to select a ceiling board strong enough to support 4 times the total weight of the camera.

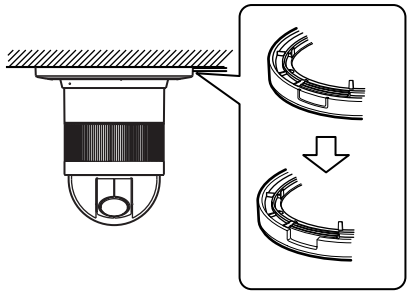
a. Sideway Cable Exit

Prepare a cutout in the diecast case and decoration cover as shown in the following figures.

Cutout in Diecast Case



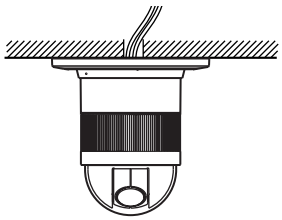
Cutout in Decoration Cover



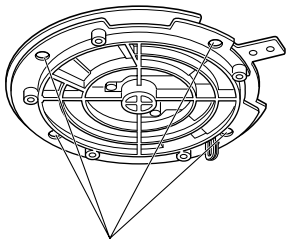
Note: Remove sharp edges to protect the cables.

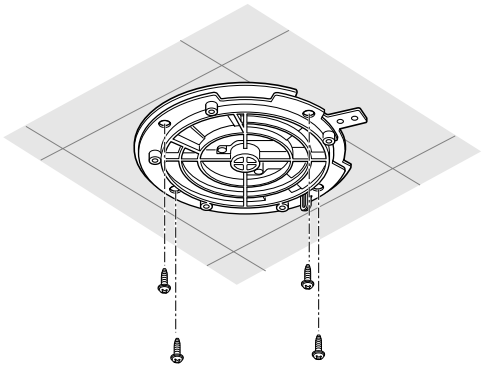
b. Top Cable Exit

Prepare a hole in the ceiling board to run the cables.



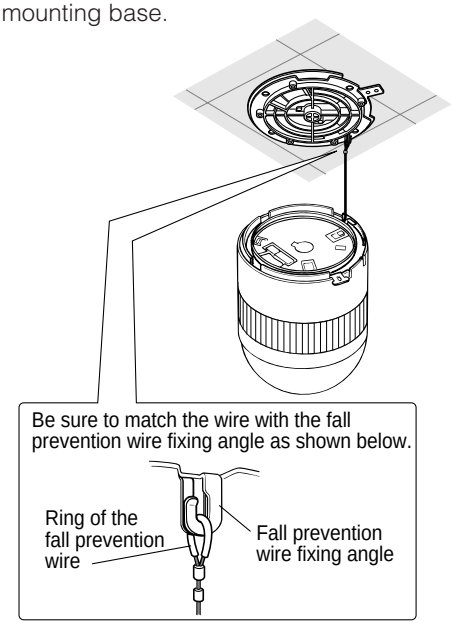
1. Mark the mounting holes on the ceiling, using the removed camera mounting base as a template.





2. Fix the camera mounting base to the ceiling with four screws (not provided, M4).

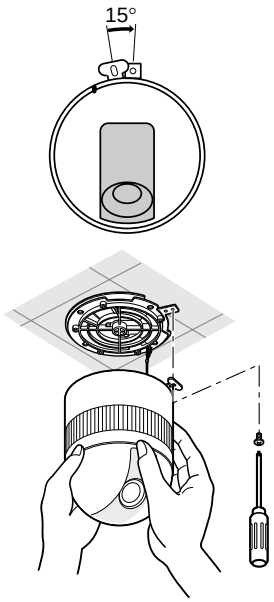
3. Hook the fall prevention wire on the camera mounting base.


Be sure to match the wire with the fall prevention wire fixing angle as shown below.
Ring of the fall prevention wire
Fall prevention wire fixing angle

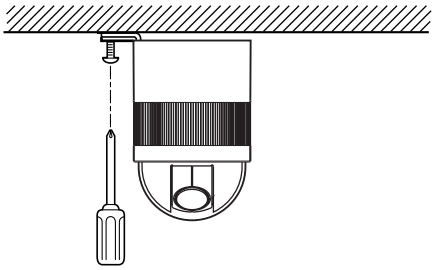
Cautions:

- Use the supplied dust protection sheet if the camera mounting base is liable to be exposed to a dusty atmosphere. Remove the cover from the dust protection sheet, then stick the sheet on the camera mounting base.
- Remove the sheet before mounting the camera on the base.
- While the camera is separated from the base, keep the camera in the supplied polyethylene sack.

4. Mount the camera on the camera mounting base and rotate the camera clockwise.



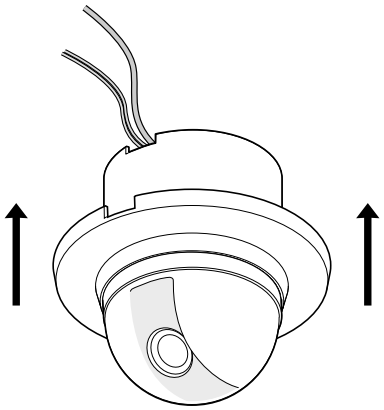
5. Tighten the fixing screw M3 (provided).
   Notes:
   (1) Tighten the camera fixing screw with a screwdriver.
   (2) Follow the instructions given here to ensure that the camera and camera mounting base are installed safely.
   (3) When removing the camera from the camera mounting base, loosen and press up the camera fixing screw (M3) by using a screwdriver.



6. Fix the decoration cover to the camera mounting base.

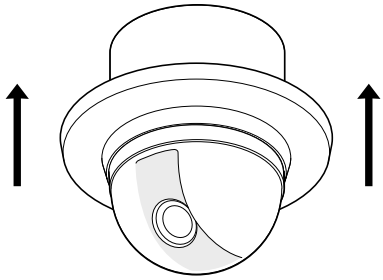
a. Sideway Cable Exit

Pass the cables through the cutout made in the diecast case and decoration cover.



b. Top Cable Exit

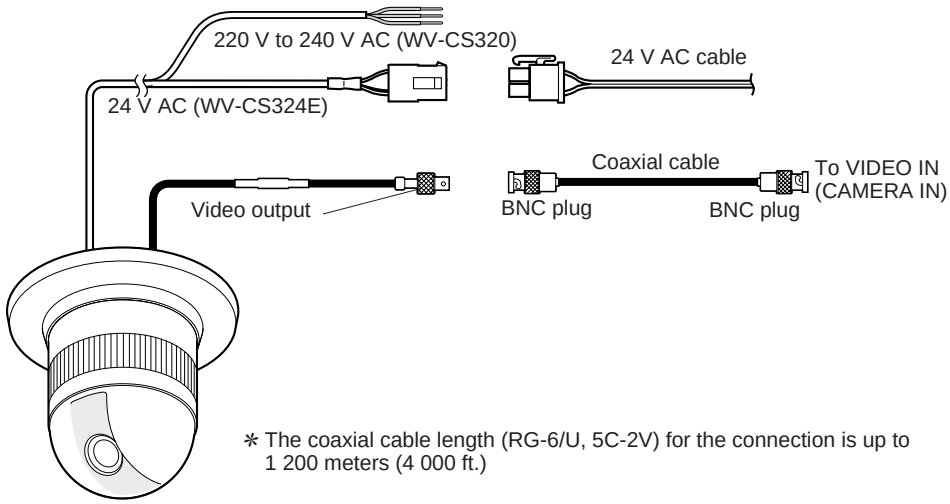
Push the decoration cover against the camera mounting base.



CONNECTIONS

Precautions

- The following connections should be made by qualified service personnel or system installers in accordance with all local codes.
- See the reverse side of the cover page for mains lead connection.



* The coaxial cable length (RG-6/U, 5C-2V) for the connection is up to 1 200 meters (4 000 ft.)

Note: When powered up, the unit performs a self-check (including one panning, tilting, zooming and focusing operation).

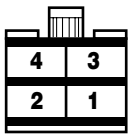
• 24 V AC Power Supply Connection

Recommended wire gauge sizes for 24 V AC line

Copper wire size (AWG)		#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Length of cable (approx.)	(m)	20	30	45	75
	(ft)	65	100	160	260

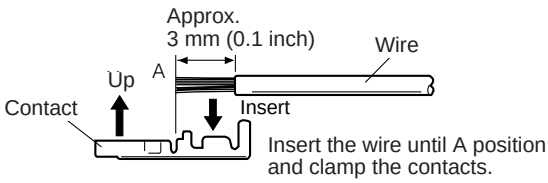
Accessory Connector Information

Pin no.	Power source
1	24 V AC LIVE
2	24 V AC NEUTRAL
3	Ground
4	Not use

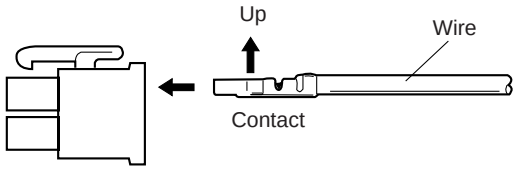


How to Assemble the Cable with the Accessory Connector

Strip back the cable jacket approx. 3 mm (0.1 inch) and separate the individual conductors.



Prepare the individual conductors for clamping. Use MOLEX band tool part number 57027-5000 (for UL-Style Cable UL1015) or 57026-5000 (for UL-Style UL1007) for clamping the contacts.
After clamping the contacts, push them into the proper holes in the accessory connector of this camera until they snap in place.

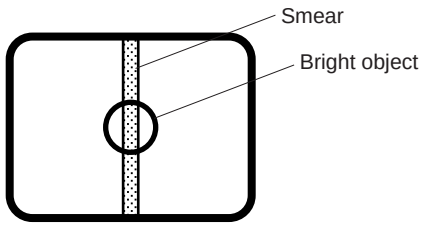


CAUTIONS

- Shrinking the cable-entry seal is a one-time procedure. Do not shrink the cable-entry seal until it has been ascertained that the unit is functioning.
- CONNECT THIS TO 24 V AC CLASS 2 POWER SUPPLY ONLY.

PREVENTION OF BLOOMING AND SMEAR

When the camera is aimed at a bright light, such as a spotlight, or a surface that reflects bright light, smear or blooming may appear. Therefore, the camera should be operated carefully in the vicinity of extremely bright objects to avoid smear or blooming.



SPECIFICATIONS

		WV-CS320	WV-CS324E
Effective pixels		752 (H) x 582 (V)	
Scanning area		3.65 mm (H) x 2.71 mm (V), 1/4”	
Synchronization		internal/line-lock / multiplexed vertical drive (VD2)	
Horizontal scanning frequency		15.625 kHz	
Vertical scanning frequency		50.00 Hz	
Video output		1.0 V[p-p] PAL composite/75 Ω	
Horizontal resolution		more than 480 lines at centre	
Vertical resolution		more than 400 lines at centre	
Signal-to-noise ratio		50 dB (AGC OFF, weight on)	
Minimum illumination		2.0 lx (0.2 foot-candle) (AGC ON HIGH)	
Zoom speed		approx. 3.8 s (TELE/WIDE) in manual mode	
Focus speed		approx. 3.0 s (FAR/NEAR) in manual mode	
Iris		automatic (open/close is possible)/manual	
Maximum aperture ratio		1 : 1.4 (WIDE) to 2.0 (TELE)	
Focal length		4.2 to 42 mm	
Angular field of view	H	4.9 ° to 48°	
	V	3.7 ° to 36 °	
Electronic shutter		1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000 s	
AGC		ON (LOW)/ON (MID)/ON (HIGH)/OFF	
BLC		selectable ON/OFF (SETUP MENU)	
Zoom ratio		x10	

Power source	220 V to 240 V AC, 50 Hz	24 V AC, 50 Hz
Power consumption	12 W	10 W
Ambient operating temperature	–10 °C to +50 °C (14 °F to 122 °F)	
Dimensions	120 (D) x 196 (H) mm (4-3/4” (D) x 7-3/4” (H))	
Weight	approx. 1.5 kg (3.3 lbs)	

Auto focus	MANUAL/AUTO
Auto mode	OFF/AUTO PAN
Flip-A-Chip	ON/OFF
Camera ID	preset ID, camera ID, characters
BLC	ON/OFF
Cleaning	ON/OFF

Panning range	360 ° endless
Panning angle setting	possible (in auto-pan mode)
Panning mode	manual/auto pan
Panning speed	manual : approx. 1.0 °/s to 100 °/s, 8-steps/64-steps preset position : maximum approx. 100 °/s
Tilting range	0 ° to 92 °
Tilting mode	manual
Tilting speed	manual : approx. 1.0 °/s to 100 °/s, 8-steps/64-steps preset position : maximum approx. 100 °/s
Controls	pan/tilt, lens, 10 preset positions, home position

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

ACCESSORIES

Decoration cover ..... 1 pc.
Connector for 24 V AC (only for WV-CS324E) ..... 1 pc.

OPTIONAL ACCESSORIES

Dome cover (approx. 60 % smoked type) WV-CS2SE
Dome cover (approx. 50 % smoked type) WV-CS2SHE
Dome cover (approx. 70 % metal type) WV-CS2ME
Ceiling mount bracket WV-Q105/WV-Q106/WV-Q107A
Wall mount bracket WV-Q108A

APPENDIX

Shortcuts

Shortcut operations are available to controllers having the CAM FUNCTION key. Entering from one to three digits using the numeric key(s) and pressing the CAM FUNCTION key will create a shortcut to the respective functions. The CAM FUNCTION key is abbreviated as [CAM FUNC] in the table below.

Function	Key	Function	Key
Selecting a PRESET position From #1 to #10		RESTART	
#1	[1] + [CAM FUNC]	Begin	[1] + [0] + [0] + [CAM FUNC]
#10	[1] + [0] + [CAM FUNC]	Memorize PRESET	From #1 to #10
AUTO PAN		Position #1	[1] + [0] + [1] + [CAM FUNC]
ON	[6] + [5] + [CAM FUNC]	Position #10	[1] + [1] + [0] + [CAM FUNC]
OFF	[6] + [6] + [CAM FUNC]	IRIS	
Speed Up	[6] + [7] + [CAM FUNC]	Open	[1] + [6] + [9] + [CAM FUNC]
Speed Down	[6] + [8] + [CAM FUNC]	Close	[1] + [7] + [0] + [CAM FUNC]
Setting Start Point	[6] + [9] + [CAM FUNC]	EL-SHUTTER	
Setting End Point	[7] + [0] + [CAM FUNC]	On	[1] + [7] + [1] + [CAM FUNC]
Setting PAN Reverse	[7] + [4] + [CAM FUNC]	Off	[1] + [7] + [2] + [CAM FUNC]
ENDLESS PAN		Speed Up	[1] + [7] + [3] + [CAM FUNC]
On	[7] + [6] + [CAM FUNC]	Speed Down	[1] + [7] + [4] + [CAM FUNC]
Off	[7] + [7] + [CAM FUNC]	AGC	
BLC		On	[1] + [7] + [5] + [CAM FUNC]
On	[8] + [4] + [CAM FUNC]	Off	[1] + [7] + [6] + [CAM FUNC]
Off	[8] + [5] + [CAM FUNC]	LL SYNC phase	
AUTO FOCUS		INC	[1] + [8] + [5] + [CAM FUNC]
AUTO	[8] + [6] + [CAM FUNC]	DEC	[1] + [8] + [6] + [CAM FUNC]
MANUAL	[8] + [7] + [CAM FUNC]	PAN	
AF On (Activate)	[8] + [8] + [CAM FUNC]	180 ° turn	[1] + [8] + [7] + [CAM FUNC]
HOME POSITION		CLEANING	
Move to HOME	[8] + [9] + [CAM FUNC]	On	[1] + [8] + [8] + [CAM FUNC]
CAMERA ID		Off	[1] + [8] + [9] + [CAM FUNC]
On	[9] + [3] + [CAM FUNC]		
Off	[9] + [4] + [CAM FUNC]		

Notes:

- Actual operation takes place when the conditions for the changed settings are met.
- Shortcuts may be ignored while PAN/TILT, ZOOM or FOCUS is in operation.

Matsushita Electric Industrial Co., Ltd.

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